

**SULFATE TURBIDIMETRIC METHOD****SM 4500-SO4<sup>-</sup> E - 1997 (2011)**

*ADDITIONAL QC REQUIREMENTS FOR THIS METHOD: Certified or Accredited laboratories using this method are assessed to applicable requirements of SM 1020 and SM 4020.*

Facility Name: \_\_\_\_\_ LAB ID: \_\_\_\_\_

Assessor Name: \_\_\_\_\_ Analyst Name: \_\_\_\_\_ Inspection Date: \_\_\_\_\_

Records Examined: SOP Number/ Revision/ Date \_\_\_\_\_ Analyst: \_\_\_\_\_

Sample ID: \_\_\_\_\_ Date of Sample Preparation: \_\_\_\_\_ Date of Analysis: \_\_\_\_\_

Relevant Aspect of Standards	Reference	Y	N	N/A	Comments
<b>Method Specific Requirements:</b>					
1. Are samples preserved at $\leq 6^{\circ}\text{C}$ and analyzed within 48 hours?	40CFR 136.3 Table 11				
2. Are determinations made at room temperature?	1.b				
3. Is one of the following used? <input type="checkbox"/> Nephelometer <input type="checkbox"/> Spectrophotometer, at 420 nm 4. <input type="checkbox"/> Filter photometer, max. transmittance 420 nm	2.b				
5. Is a constant stirring speed used during analysis?	2.a				
6. Is the appropriate buffer used? <input type="checkbox"/> <b>Buffer A:</b> 30 g magnesium chloride, 5 g sodium acetate, 1 g potassium nitrate, 20 mL acetic acid, diluted to 1000 mL. <input type="checkbox"/> <b>Buffer B:</b> (IF sample $\text{SO}_4^{2-} < 10 \text{ mg/L}$ ) 30 g magnesium chloride, 5 g sodium acetate, 1 g potassium nitrate, 0.111 g sodium sulfate, 20 mL acetic acid, diluted to 1000 mL. <b>(Buffer B is required if sample concentration is <math>&lt; 10 \text{ mg/L}</math>)</b>	3.a  3.b				
7. Is a 100 mL portion of sample used? <i>(Or a suitable portion diluted to 100 mL with distilled water.)</i>	4.a				
8. Is a 20 mL portion of buffer solution added to sample while mixing, followed by a spoonful of $\text{BaCl}_2$ crystals? Is timing begun immediately after adding the $\text{BaCl}_2$ crystals?	4.a				
9. Is the mixture stirred for $60 \pm 2$ seconds at constant speed?	4.a				
10. After stirring for 60 seconds, is the sample poured into the absorption cell and measured within $5 \pm 0.5$ minutes?	4.b				
Notes/ Comments:					

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11. Is a calibration curve prepared by carrying standards through the same procedure as samples? ( <i>Standards should be at 5 mg/L increments.</i> )	4.c				
12. Is the calibration checked by running a standard with every three or four samples?	4.c				
13. Are sample readings corrected for color and turbidity by analyzing and subtracting sample blanks (with no BaCl <sub>2</sub> added)?	4.d				
14. Are sample results calculated as follows:  $\text{Mg SO}_4^{2-}/\text{L} = \frac{\text{mg SO}_4^{2-} \times 1000}{\text{mL sample}}$ <i>Note 1: If buffer A is used, determine SO<sub>4</sub><sup>2-</sup> concentration directly from the calibration curve after subtracting sample absorbance before adding BaCl<sub>2</sub>.</i> <i>Note 2: If buffer B was used, subtract SO<sub>4</sub><sup>2-</sup> concentration of blank from apparent SO<sub>4</sub><sup>2-</sup> concentration as determined using the formula.</i>	5				

Notes/ Comments: